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**APPLICATION
FOR
UNITED STATES
LETTERS PATENT**

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FOR: **METHOD OF AUTOMATICALLY
REPLYING TO E-MAIL AND MOBILE
TERMINAL FOR DOING THE SAME**

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METHOD OF AUTOMATICALLY REPLYING TO E-MAIL
AND
MOBILE TERMINAL FOR DOING THE SAME

5 BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The invention relates to a method of automatically replying to a received e-mail in a mobile terminal having a function of transmitting/receiving an e-mail, a mobile terminal having functions of transmitting/receiving an e-mail
10 and automatically replying to a received e-mail, and a program for causing a computer to carry out a method of automatically replying to a received e-mail in a mobile terminal having a function of transmitting/receiving an e-mail.

DESCRIPTION OF THE RELATED ART

15 In voice or e-mail communication through mobile terminals, a transmitter usually expects a receiver to make a prompt response. Hence, if a receiver cannot make a prompt response for some reasons, it is preferable to make a response to a transmitter by any means. In particular, it would be possible in a business scene to avoid a client from unnecessarily waiting a
20 response by informing the client that communication will be made to him/her at a certain time.

For instance, Japanese Patent Application Publication No. 2001-337899 has suggested a method of automatically replying to a received e-mail which method makes it possible to make a response at real-time without
25 waiting an e-mail transmitter, even if an e-mail receiver cannot transmit an e-mail as a response. In the suggested method, a plurality of character data to be displayed in a display screen is stored in a memory, and a character unique to an e-mail transmitter is transmitted for readily identifying a transmitter.

However, the suggested method is accompanied with the following

problems.

The first problem is that since only characters and letters are used for making a response, a circumstance of an e-mail receiver is informed to an e-mail transmitter only in characters and letters. This means that visibility is poor.

5 The second problem is that since characters are determined by a manufacturer and stored in a mobile terminal before the mobile terminal is shipped, a user cannot edit, amend and revise such characters.

 Japanese Patent Application Publication No. 2000-3316 has suggested a mailer including first means for displaying a received mail, second means for
10 selecting YES or NO, and third means for transmitting a positive message to an address of the received mail, when YES is selected, and transmitting a negative message to the address, when NO is selected.

 Japanese Patent Application Publication No. 2000-22841 has suggested a method of replying to a mail, including the steps of storing a telephone number
15 of a mail transmitter, calling the telephone number, and transmitting a predetermined message to the telephone number.

 Japanese Patent Application Publication No. 2000-102047 has suggested an e-mail processor which, on receipt of an e-mail, automatically transmits a message to an e-mail transmitter to tell the e-mail transmitter that
20 an e-mail receiver is out.

 Japanese Patent Application Publication No. 2001-356995 has suggested an information providing system including a server assigning a predetermined address to each of services, and having database for the services. When a user transmits an e-mail to the predetermined address, the server picks
25 information associated to the predetermined address, out of the server, and transmits the information to the user.

 Japanese Patent Application Publication No. 2002-171362 has suggested a method of making communication between terminals, including the steps of checking a current time, when a current time reaches a predetermined

time, selecting image or voice data associated with the predetermined time among a plurality of image or voice data, and transmitting the thus selected image or voice data to a terminal.

Japanese Patent Application Publication No. 2002-197038 has suggested an image-communication system including a mobile terminal and an image data processor. The mobile terminal has functions of transmitting image data together with an e-mail, and displaying image data contained in a received e-mail. The image data processor receives an e-mail to which image data is attached, from the mobile terminal, and separates the image data from the e-mail. Then, the image data processor processes the image data, and transmits the thus processed image data to the mobile terminal together with an e-mail.

Japanese Patent Application Publication No. 11-154974 has suggested a mailer used for a mobile terminal, including first means for receiving an e-mail, second means for setting a mobile terminal into a first mode, third means for storing a plurality of fixed mails, fourth means for judging an attribute of a received e-mail while the mobile terminal is in the first mode, fifth means for selecting one of the mails stored in the third means, in accordance with the attribute of a received e-mail, and sixth means for automatically transmitting the selected mail to an address of the received e-mail.

Japanese Patent Application Publications Nos. 8-288962, 8-331621, 60-206244, 8-204843, 10-269283 and 2-241241 have suggested a method of automatically replying to a received e-mail.

SUMMARY OF THE INVENTION

In view of the above-mentioned problems in the prior art, it is an object of the present invention to provide a method of automatically replying to a received e-mail in a mobile terminal having a function of transmitting/receiving an e-mail, which method ensures much visibility to a user and makes it possible for a user to edit a response e-mail.

It is also an object of the present invention to provide a mobile terminal having functions of transmitting/receiving an e-mail and automatically replying to a received e-mail, which mobile terminal can do the same.

It is further an object of the present invention to provide a program for
5 causing a computer to carry out the above-mentioned method in a mobile terminal having a function of transmitting/receiving an e-mail.

In accordance with the present invention, image data is automatically transmitted to an e-mail transmitter in response to a received e-mail. A mobile terminal is recently designed to have a camera, ensuring that a user can readily
10 obtain and edit image data. In addition, infrastructure is being built for ensuring much-volume data communication such as high-rate communication of image data, because of commencement of commercially available service of a third-generation cellular phone. In such a circumstance, transmission of image data through a mobile terminal will be facilitated.

15 In accordance with the present invention, when a user receives an e-mail through his/her mobile terminal having a function of transmitting and receiving an e-mail, image data stored in the mobile terminal is automatically transmitted to a predetermined mail address, even if the user is in a condition that he/she cannot make a response to the received e-mail. Since image data is
20 transmitted to an opposite party, he/she can soon realize which condition the e-mail receiver is in.

Specifically, the present invention provides, in one aspect, a method of automatically replying to a received e-mail in a mobile terminal having a function of transmitting and receiving an e-mail, including the step of
25 automatically transmitting image data determined in accordance with an address of a transmitter of the received e-mail, to the address.

It is preferable that the image data is edited in accordance with the address.

For instance, the image data may be comprised of moving-image data.

It is preferable that text data determined in accordance with the address is automatically transmitted together with the image data.

The method may further include the step of determining whether the image data is automatically transmitted in response to the received e-mail.

5 There is further provided a method of automatically replying to a received e-mail in a mobile terminal having a function of transmitting and receiving an e-mail, including the steps of (a) checking whether an address of a transmitter of a received e-mail is stored in a memory, (b) checking whether image data associated with the address is stored in the memory, and (c)
10 transmitting the image data to the address.

The method may further include the step of (d) judging whether it is determined to automatically transmit image data determined in accordance with the address, to the transmitter, the step (d) being carried out prior to the step (a).

 The method may further include the steps of (e) checking whether text
15 data associated with the address is stored in the memory, wherein the text data is transmitted to the address together with the image data in the step (c).

The method may further include the step of (f) editing the image data in accordance with the address.

 In another aspect of the present invention, there is provided a mobile
20 terminal having functions of transmitting and receiving an e-mail, and automatically replying to a received e-mail, including a controller for automatically transmitting image data determined in accordance with an address of a transmitter of the received e-mail.

 It is preferable that the controller edits the image data in accordance
25 with the address.

It is preferable that the image data is comprised of moving-image data.

It is preferable that text data determined in accordance with the address is automatically transmitted together with the image data.

For instance, the mobile terminal is comprised of a cellular phone.

For instance, the controller may include a data processor and a memory, wherein the memory includes a first memory area for storing addresses to which an e-mail is automatically transmitted, and a second memory area for storing moving-data to be edited by a user of the mobile terminal for each of the
5 addresses, and the data processor includes a first retriever which retrieves the addresses stored in the first memory area, and a second retriever which retrieves the moving-data stored in the second memory area.

The memory may further include a third memory area for storing a message to be edited by the user, and the data processor may further include a
10 third retriever which retrieves the message stored in the third memory area.

It is preferable that the controller includes a unit for determining whether the image data is automatically transmitted in response to the received e-mail.

In still another aspect of the present invention, there is provided a
15 program for causing a computer to carry out a method of automatically replying to a received e-mail in a mobile terminal having a function of transmitting and receiving an e-mail, wherein steps executed by the computer in accordance with the program include automatically transmitting image data determined in accordance with an address of a transmitter of the received e-mail, to the
20 address.

There is further provided a program for causing a computer to carry out a method of automatically replying to a received e-mail in a mobile terminal having a function of transmitting and receiving an e-mail, wherein steps executed by the computer in accordance with the program include (a) checking
25 whether an address of a transmitter of a received e-mail is stored in a memory, (b) checking whether image data associated with the address is stored in the memory, and (c) transmitting the image data to the address.

The steps may further include (d) judging whether it is determined to automatically transmit image data determined in accordance with the address, to

the transmitter, the step (d) being carried out prior to the step (a).

The steps may further include (e) checking whether text data associated with the address is stored in the memory, wherein the text data is transmitted to the address together with the image data in the step (c).

5 The advantages obtained by the aforementioned present invention will be described hereinbelow.

The first advantage is that since image data is transmitted to an e-mail transmitter in response, he/she can readily realize a condition in which an e-mail receiver is, due to the received image data.

10 The second advantage is that since a response e-mail is automatically transmitted to an e-mail transmitter when a user cannot make a prompt response, an e-mail transmitter can immediately receive a response from an e-mail receiver.

15 The third advantage is that since a user can edit image data, he/she can transmit appropriate data matching to a condition in which he/she is.

The fourth advantage is that since a user can determine, for each of addresses of e-mail transmitters, whether image data should be automatically transmitted in response to a received e-mail, the user can have enhanced serviceability.

20 The above and other objects and advantageous features of the present invention will be made apparent from the following description made with reference to the accompanying drawings, in which like reference characters designate the same or similar parts throughout the drawings.

25 BRIEF DESCRIPTION OF THE DRAWINGS

FIGs. 1 and 2 are perspective views of a cellular phone to which a mobile terminal in accordance with the present invention is applied.

FIG. 3 is a block diagram of the cellular phone illustrated in FIGs. 1 and 2.

FIG. 4 is a partial block diagram of the cellular phone illustrated in FIGs. 1 and 2.

FIG. 5 is a flow-chart showing an operation of the cellular phone illustrated in FIGs. 1 and 2.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment in accordance with the present invention will be explained hereinbelow with reference to drawings.

10 In an embodiment explained hereinbelow, a mobile terminal in accordance with the present invention is applied to a cellular phone.

FIGs. 1 and 2 are perspective views of a cellular phone 30 to which a mobile terminal in accordance with the present invention is applied. As illustrated in FIGs. 1 and 2, the cellular phone 30 is a foldable one.

15 The cellular phone 30 is comprised of an upper half 21a, a lower half 21b, a hinge 21c around which the upper and lower halves 21a and 21b are swingable to each other, an antenna 23a, and a helical antenna 23b mounted at a top of the antenna 23a.

The antenna 23a is extendible from the upper half 21a and contractible into the upper half 21a.

20 The upper half 21a includes a speaker 24 and a display screen 25. The lower half 21b includes a microphone 26 and numeral keys 27.

The upper and lower halves 21a and 21b are rotatable around the hinge 21c. Hence, the cellular phone 30 can be folded, as illustrated in FIG. 3, wherein the upper and lower halves 21a and 21b overlap each other. When the
25 cellular phone 30 is not folded, as illustrated in FIG. 2, the upper and lower halves 21a and 21b make an angle of about 180 degrees.

FIG. 3 is a block diagram of the cellular phone 30.

The cellular phone 30 is comprised of an antenna 23a through which a radio signal is received and transmitted, a radio signal modem 1 which

modulates a radio signal to be transmitted therefrom and demodulates a received radio signal, a controller 10 comprised of LSI and receiving demodulated radio signals from the radio signal modem 1, a memory 3 storing data and a program therein, an e-mail data memory 20, a speaker 24, a microphone 26 which collects
5 voices of a user, a display unit 25 which displays various data such as a content of a received e-mail, an interface 9 comprised of the numeral keys 27 through which a user inputs data into the controller 10, and a vibrator 2 which vibrates a body of the cellular phone 30.

FIG. 4 is an enlarged block diagram of the controller 10 and the e-mail
10 data memory 20.

The e-mail data memory 20 includes a first memory area 21, a second memory area 22, and a third memory area 23.

The first memory area 21 stores addresses to which image data is to be automatically transmitted. A user can input such addresses into the first
15 memory area 21 through the numeral keys 27, or can select one of the addresses through an address list.

The second memory area 22 stores messages or sentences to be mailed which a user can edit for each of the addresses stored in the first memory area 21. Herein, the messages or sentences are comprised only of text data.

20 The third memory area 23 stores moving-image data which a user can edit for each of the addresses stored in the first memory area 21.

The controller 10 includes a unit 11 and a data processor 12.

In the unit 11 is stored whether a reply is automatically transmitted to an e-mail transmitter in response to a received e-mail. The unit 11 may be
25 designed to co-work with a clock (not illustrated) housed in the cellular phone 30 to start automatic-reply as from an indicated date and time.

The data processor 12 includes a first retriever 13 retrieving data stored in the first memory area 21, a second retriever 14 retrieving data stored in the second memory area 22, and a third retriever 15 retrieving data stored in the

third memory area 23.

If the unit 11 is set to automatically transmit a reply to an e-mail transmitter in response to a received e-mail, when the cellular phone 30 receives an e-mail, the first retriever 13 retrieves addresses stored in the first memory area 21 with an address of a received e-mail being used as a key. If the first retriever 13 found an address coincident with the address of a received e-mail, the second retriever 14 retrieves the second memory area 22. If the second retriever 14 found a message or sentences to be mailed, associated with the address having been found by the first retriever 13, the third retriever 15 retrieves the third memory area 23. If the third retriever 15 found image data associated with the address having been found by the first retriever 13, the message having been found by the second retriever 14 and the image data having been found by the third retriever 15 are automatically transmitted to an e-mail transmitter.

FIG. 5 is a flow-chart of an operation of the cellular phone 30. Hereinbelow is explained an operation of the cellular phone 30 with reference to FIG. 5.

When the cellular phone 30 receives an e-mail, the controller 10 checks whether it is determined to automatically transmit a reply to an e-mail transmitter in response to a received e-mail, in step S1.

If not determined (NO in step S1), the automatic-reply is not carried out (step S4).

If determined (YES in step S1), an address of the received e-mail is transmitted to the first retriever 13. Then, the first retriever 13 checks whether the address of the received e-mail is stored in the first memory area 21, in step S2.

If not stored (NO in step S2), the automatic-reply is not carried out (step S4).

If stored (YES in step S2), the first retriever 13 transmits the address

of the received e-mail to the second retriever 14. The second retriever 14 checks whether a message or a mail associated with the address is stored in the second memory area 22, in step S3.

5 If not stored (NO in step S3), the automatic-reply is not carried out (step S4).

If stored (YES in step S3), the second retriever 14 transmits the address of the received e-mail to the third retriever 15. The third retriever 15 checks whether moving-image data associated with the address is stored in the third memory area 23, in step S5.

10 If not (NO in step S5), only the message or mail having been found by the second retriever 14 out of the second memory area 22 is automatically transmitted to the address of the received e-mail, in step S6.

15 If stored (YES in step S5), the controller 10 transmits both of the message and the moving-image data to the address of the received e-mail through the radio signal modem 1 and the antenna 23a and 23b, in step S7.

20 Though the moving-image data is transmitted to the address of the received e-mail in step S7, it should be noted that still-image data may be transmitted in place of moving-image data. Voice data may be transmitted to the address of the received e-mail together with the moving-image or still-image data in step S7.

25 When the message is not stored in the second memory area 22 (NO in step S3), and hence, the automatic reply is not carried out (step S4), a predetermined message determined as default may be transmitted to the address of the received e-mail so as to let the e-mail transmitter know that a user of the cellular phone 30 safely receives his/her e-mail.

If both of a user of the cellular phone 30 and an e-mail transmitter activate the unit 11 to carry out the automatic reply, it is necessary for at least one of them to inactivate the unit to stop the automatic reply, by checking a history of e-mail transmission or receipt.

Any date and time can be stored in the unit 11. Hence, when the unit 11 is inactivated not to carry out the automatic reply, it is possible to drive the unit 11 to transmit image data to an indicated address at indicated date and time. Thus, any information such as a congratulation message of a birthday may be transmitted to any person.

If the cellular phone 30 is designed to have a function of television-telephone, moving-image data stored in the third memory area 23 may be automatically transmitted in response to a received e-mail, when a user cannot make a reply to a received e-mail.

Though the cellular phone 30 is designed to be a foldable one, the cellular phone 30 may be designed to be a non-foldable one, that is, a box type one.

In the above-mentioned embodiment, the mobile terminal is comprised of a cellular phone. However, it should be noted that the mobile terminal may be comprised of a personal digital assistant (PDA), a mobile phone in accordance with a personal handy phone system (PHS), and the like.

In the above-mentioned embodiment, when the automatic reply is carried out, only a message (step S6) or both of a message and image data (step S7) is automatically transmitted to the address of a received e-mail. As an alternative, only image data may be automatically transmitted to the address of a received e-mail.

An operation of the controller 10 can be accomplished by a computer program written in a language readable by a computer.

For operating the controller 10 by means of a computer program, the controller 10 is designed to include a memory such as the memory 3 to store a computer program therein, for instance. The computer program is stored in the memory, and is read out into the controller 10 when the controller 10 starts its operation. Thus, such an operation of the controller 10 as mentioned above is accomplished in accordance with the computer program.

As an alternative, a recording medium storing such a computer program as mentioned above may be set into the controller 10 to be read out by the controller 10.

The functions of the controller 10 may be accomplished as a program including various commands, and be presented through a recording medium readable by a computer.

In the specification, the term "recording medium" means any medium which can record data therein.

The term "recording medium" includes, for instance, a disk-shaped recorder such as CD-ROM (Compact Disk-ROM) or PD, a magnetic tape, MO (Magneto Optical Disk), DVD-ROM (Digital Video Disk-Read Only Memory), DVD-RAM (Digital Video Disk-Random Access Memory), a floppy disk, a memory chip such as RAM (Random Access Memory) or ROM (Read Only Memory), EPROM (Erasable Programmable Read Only Memory), EEPROM (Electrically Erasable Programmable Read Only Memory), smart media (Registered Trade Mark), a flush memory, a rewritable card-type ROM such as a compact flush card, a hard disk, and any other suitable means for storing a program therein.

A recording medium storing a program for accomplishing the above-mentioned apparatus may be accomplished by programming functions of the above-mentioned apparatuses with a programming language readable by a computer, and recording the program in a recording medium such as mentioned above.

While the present invention has been described in connection with certain preferred embodiments, it is to be understood that the subject matter encompassed by way of the present invention is not to be limited to those specific embodiments. On the contrary, it is intended for the subject matter of the invention to include all alternatives, modifications and equivalents as can be included within the spirit and scope of the following claims.

The entire disclosure of Japanese Patent Application No. 2003-071607

filed on March 17, 2003 including specification, claims, drawings and summary is incorporated herein by reference in its entirety.